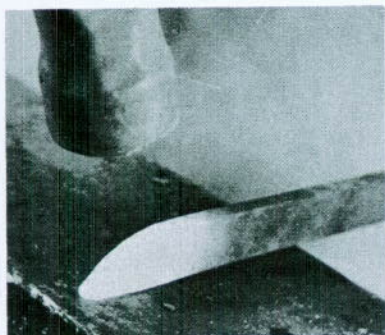
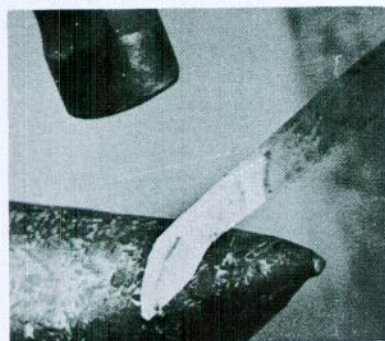


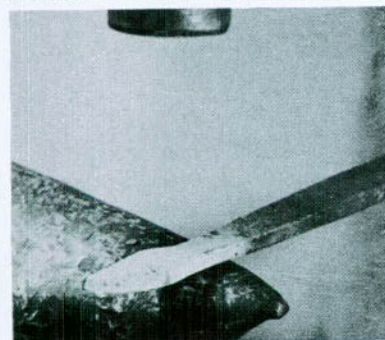
Fig. 21

**A**

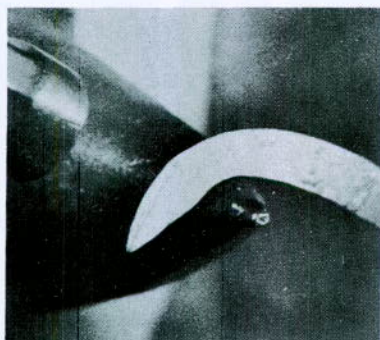
Forge the end of a bar to a radius. The curve should be no longer than shown here, otherwise the leaf-end will be too long.

**B**

Neck over the bick, leaving the straight bottom edge of the end a little longer than the width of the bar.

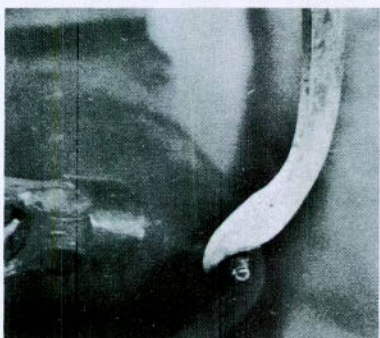
**C**

Thin the neck on the flat, to about two-thirds.



D

Bend the neck, on edge, over the bick.



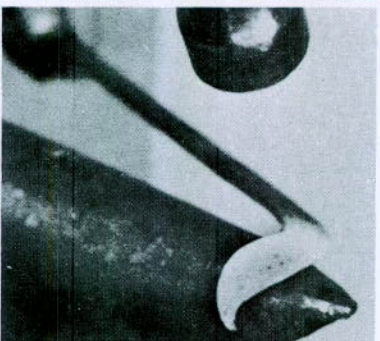
E

Cock the tip, still on edge, in the opposite direction to the main bend.



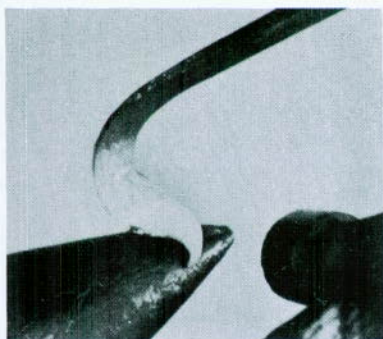
F

With ball-faced hammer, thin both edges, on one face, controlling the curve as you do so.



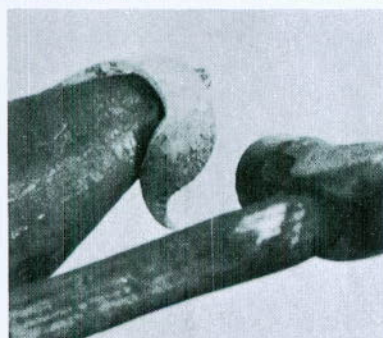
G

So far, the piece has been bent on the edge. Now, with the hammered face upwards, curve the leaf on the flat.



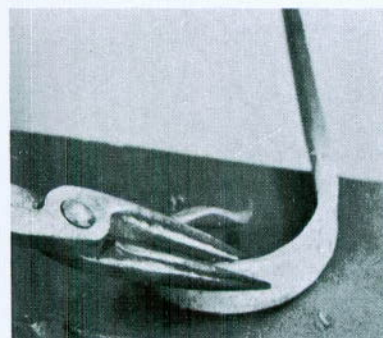
H

The tip has already been cocked in the opposite direction to the main curve on edge (E). Now cock it in the opposite direction to the curve you have just made.



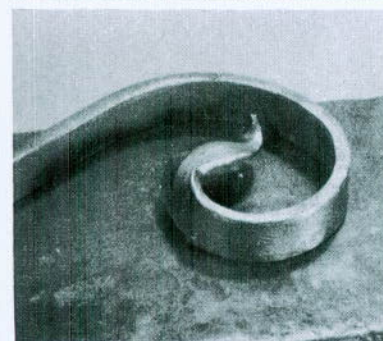
J

Increase the curl in the neck at the same time twisting the leaf partly into line with the bar. Avoid solid blows which would distort the shape.



K

Form and adjust the scroll with pliers.



L

The finished scroll. The leaf can be aligned a trifle if necessary, with light blows.

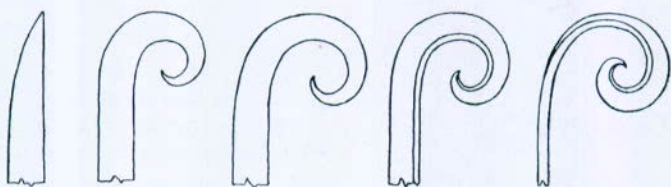
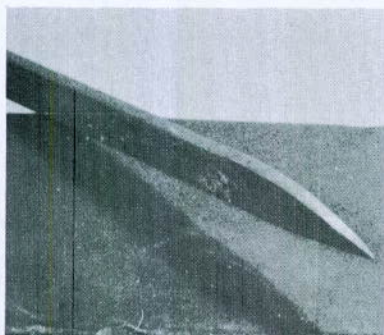
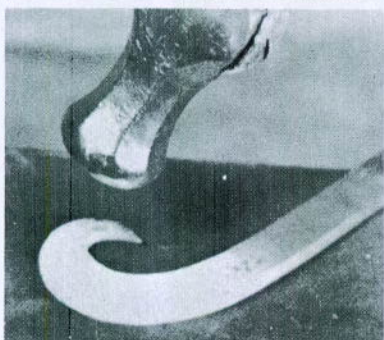


Fig. 22

**A**

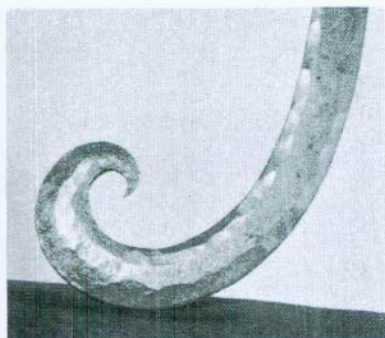
Draw the end of the bar with one edge curved, the other straight, and the extreme tip sharply pointed. Curl on bick.

**B**

With ball-faced hammer, thin both edges on one face, controlling the curve as you do so.

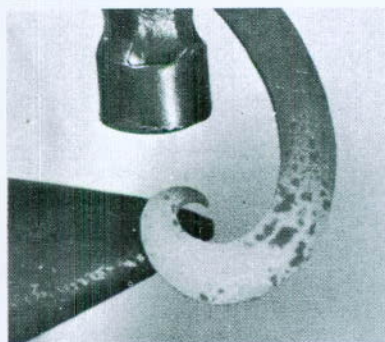
**C**

Tap the end of the scroll out of alignment and tuck in the end, neatly, on the anvil face.



D

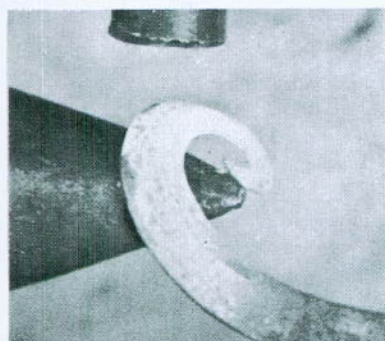
Here is the result so far, shown cold. Note the steady increase in radius from the tip.



E

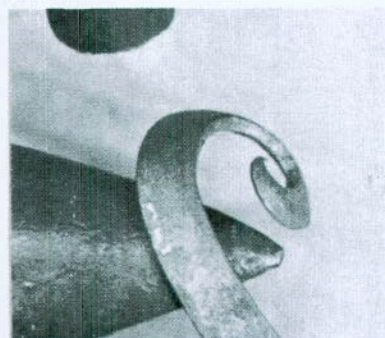
Place the inner edge of the tip on the point of the bick, the outer edge being kept a little off it.

Hammer the outer edge lightly down onto the bick, bending it only. Avoid solid blows which would distort the shape.



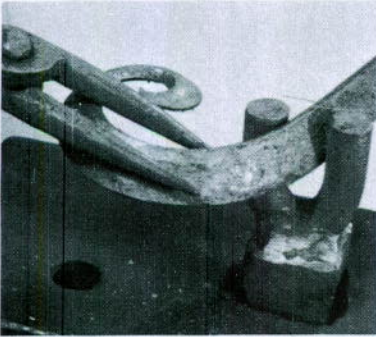
F

Continue in the same way round the scroll, re-heating as necessary.



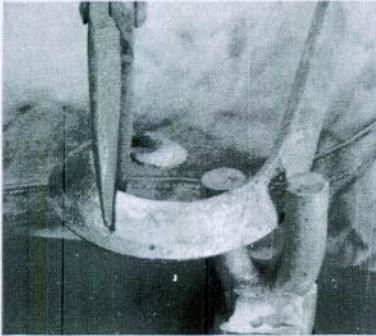
G

Here is the result, almost completed.



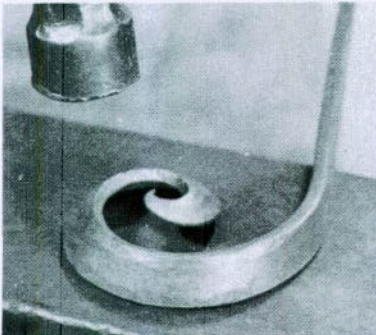
H

Complete the bending with horns and pliers.



J

By varying the position of the scroll and the pliers the scroll is not only bent but also twisted to maintain the balance between the bevel and the curve.



K

Finally the centre can be flattened a little if necessary.

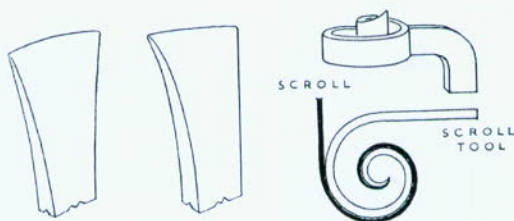


Fig. 23

It is not necessary to make a new scroll tool for every job. In any established shop there will be a number of scroll tools to hand which have been made or adapted to the job in hand. Sometimes the beginning of the scroll tool only is used, a chalk mark being made to show how far the scroll bar should be pulled round. New scroll tools, however, have to be made sooner or later.

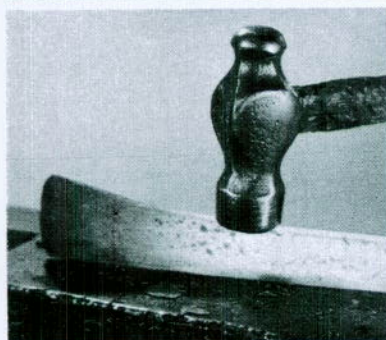
It is easier to make a scroll tool direct from the drawing than it is to make one from a scroll. So if the job warrants a new scroll tool make it before you make the first scroll. Once you know how the scroll tool is used this is not difficult.

Simply make the outer edge of the scroll tool conform to the inner edge of the scroll on the drawing. The thickness of the scroll tool does not matter.

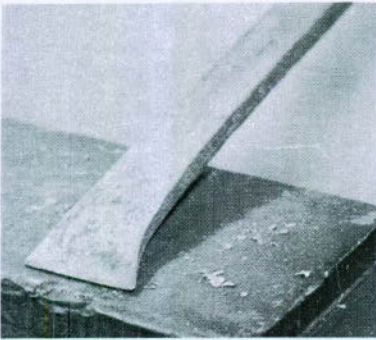
**A**

Take a bar somewhat heavier than the scroll to be made.

Forge a fishtail on the end.

**B**

Offset the fishtail by straightening one edge.



C

Cut off the end square with the straight edge.



D

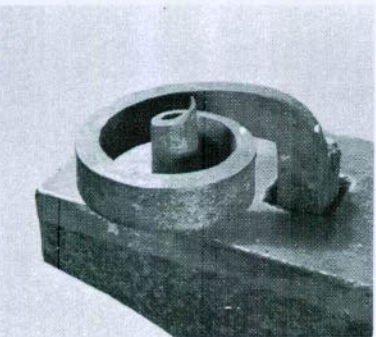
If you are right handed, begin rolling the scroll tool with the offset edge to the left, over the far edge of the anvil, or vice versa for a left-handed smith.



E

When you have made a good start with the hammer, continue with horns and wrench.

Pull with the wrench, rather than with the hand holding the bar, as the shape is more easily controlled by the wrench.



F

Finally bend the end of the scroll tool at right angles and wedge it into the swage hole of the anvil. The purpose of the offset fishtail can be clearly seen; it makes the start of the scroll accessible.

The scroll tool can be held in the vice if it is more convenient.

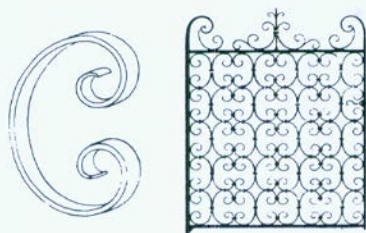


Fig. 24

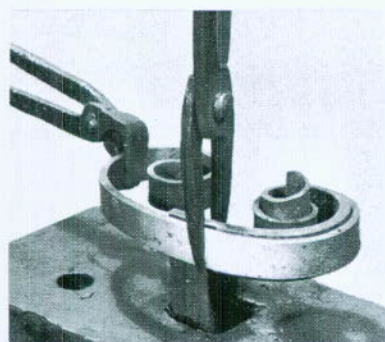
'C' scrolls are often needed in large numbers for gates, grilles, fire-screens and so on. To make them quickly it is necessary to have a scroll tool exactly the right size which finishes at precisely the centre point of the scroll. Otherwise the end of the scroll tool would foul the first scroll when the second was being made.

For measuring it is convenient to have the end of the scroll tool bent down at right angles with a fairly sharp outside corner.

First find out by measuring how much metal is needed to make each 'C' scroll, allowing for the drawing out. Next cut off all the pieces to this length and centre-punch mark them in the middle. Draw one to the correct length, chalk it, and draw all the others to it as a pattern.

Take a RED heat and scroll. The centre-punch mark should come level with the corner of the scroll tool to within $\frac{1}{8}$ inch.

This means the scrolls will be sufficiently alike to fit together with little cold setting.



A

Here is a 'C' scroll being completed on the tool.

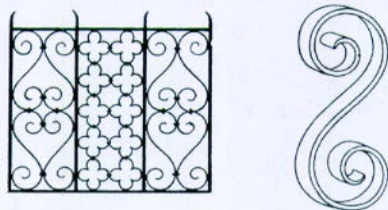


Fig. 25

'S' scrolls also are often used in large numbers. A scroll tool of the same type as used for 'C' scrolls is best, even though there is no danger here of the first scroll of the 'S' fouling the tool as the second is made.

Both 'C' and 'S' scrolls are used in pairs or greater numbers in repetitive designs. It is the best practice to fasten them together with collars; this is described on page 39.

However many scrolls are wanted, start by collaring them together in pairs and then fix the pairs together. To do this, first make a frame whose inside size is the over-all size of one scroll.

Offer the scroll to the frame, and adjust the scroll until it fits. Then make a second frame to fit a pair of scrolls. Press the scrolls into this frame and fix the collars.

**A**

The frame shown is not part of the design, but merely a jig to ensure the scrolls are accurate, and to keep them together while the initial collars are put on.

Among the various methods of fixing scrolls together collars are important. They not only contribute to the design but are often the only satisfactory way of doing the job.

Men who are not skilled at making them often shun collars as being troublesome and expensive. But if they are made by the right methods with forethought and skill, no one need fail to master them.

Collars are frequently needed in fair numbers, so it is worth taking trouble to have all the details right before you begin to turn them out.

First select or make a mandril, a piece of iron convenient to hold, the end of which is the same size as the two thicknesses of scroll which the collar will grip. The mandril can be either a plain piece of bar twice the thickness of the scroll bar, a larger piece of bar drawn down to this thickness; or, for light work, a piece of scroll bar bent back on itself, as shown in the first photograph of this lesson.

Next find out the length of the piece of metal required to make each collar. Make a trial with the actual bar from which you intend to make the collars, fitted to a pair of the actual scrolls in hand. Although measurements are needed for a start, they are not to be trusted as all bars vary slightly from their nominal size, and different qualities of iron or steel stretch a different amount when bent at the corners.

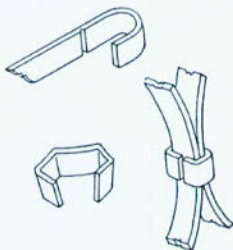
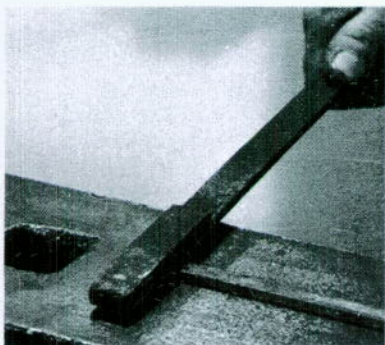


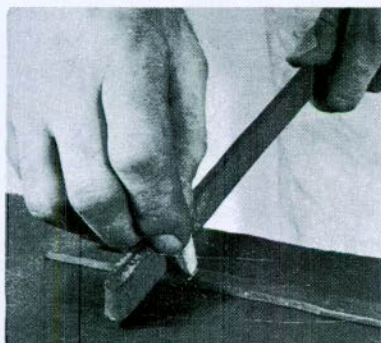
Fig. 26



A

The measuring can be done in one of two ways.

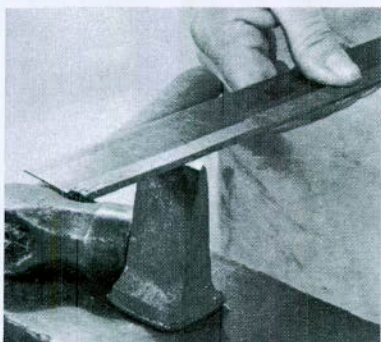
The mandril can be laid in the collar bar as shown here and rolled along four quarter turns, and twice the thickness of the collar bar added by eye.



B

Alternatively a piece can be marked off to a measurement of twice the thickness plus twice the width of the mandril, plus twice the thickness of the collar bar.

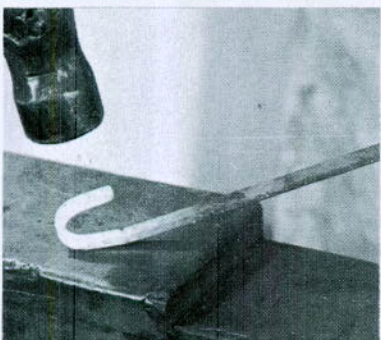
Whichever method of measurement is used, set a pair of dividers to the length before making up the trial collar.



C

Notch the collar bar halfway through on a hardie.

The operations which follow are done more quickly than they can be described, in order to make best use of the heat.



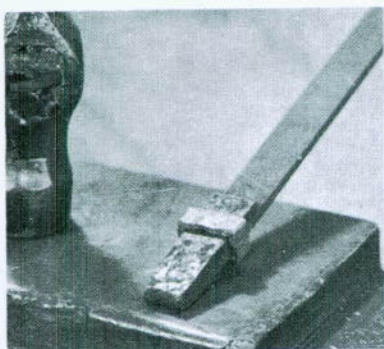
D

Take a NEAR WELDING heat, and bend the collar round over the anvil bick with the cut on the inside. Take care not to draw the collar on the bick. Close up to a 'U' shape bringing the end in line with the cut.



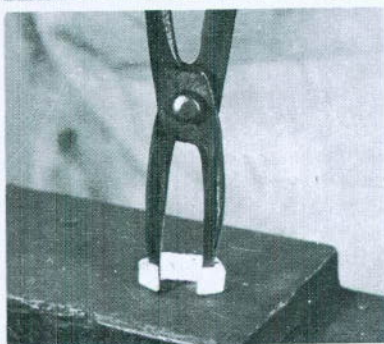
E

Lay the mandril on the flat in the middle of the 'U' and close the ends of the collar over it. The end of the collar should meet on the side of the work, as here, and not on the front, back or corners.



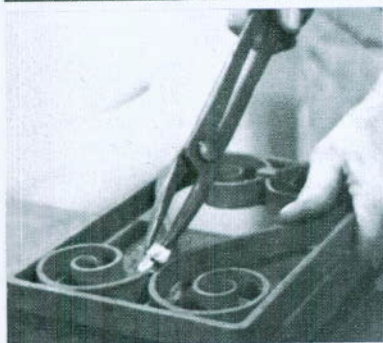
F

Forge the collar clean and square on the mandril. Tap it off the mandril and level up the edges. All this can be done in one heat, but the beginner need not be ashamed of taking two. Now examine the collar and decide if any obvious alteration should be made in the length.



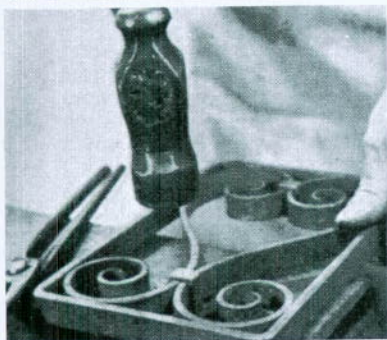
G

Heat the collar on the tip of the poker and open it out by putting the round-nosed pliers inside and pulling the handles apart.



H

Thread it on the scrolls.



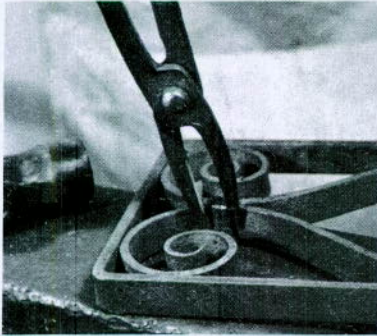
J

Tap it down with the hammer.



K

Pinch in the sides with the bow pliers.



L

If required, line up joint with pliers. Now examine the job with the greatest possible care. Decide if any alteration in the original length would be an advantage, and if so, make another trial.

When finally satisfied, mark off on the metal all the pieces you will want for your collars, and notch as much at a time as you can conveniently handle.